CLAIMS:

1.   A method of searching for data patterns in a dynamically changing data store, the data store holding a plurality of data records, the method comprising:

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creating a new data agent for each new data record that arrives at the data store, the new data agent being implemented as an executable program and having a decision engine operable to match the represented data record with other data records based on a data cluster valuation formula;

10   wherein the new data agent negotiates with any existing agents in the system to form a cluster of data records representing said data patterns.

2.   A method according to claim 1, wherein existing agents in the system include cluster agents representing a cluster of data records.

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3.   A method according to claim 2, wherein the new data agent negotiates by considering available clusters, selecting attractive clusters based on a cluster valuation formula, and sending an application for membership to the selected cluster.

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4.   A method according to claim 3, wherein cluster agents receive membership applications, evaluate the applying data agents using a data valuation formula and making a decision about whether to offer membership to the applying data agent based on a cluster value.

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5.   A method according to claim 3, wherein, if no suitable cluster is available, the new data agent negotiates with an existing data agent to form a new cluster.

6.   A method according to claim 5, wherein a new cluster is formed only if it
30   increases overall value of the system, said overall value of the system being derived from cluster values.

7.   A method according to claim 4, wherein, after forming clusters, cluster agents are created to represent those clusters and these cluster agents negotiate to reform new clusters.

5   8.   A method according to any preceding claim, wherein each new data record is associated with an energy level.

9.   A method according to claim 8, wherein the energy level associated with a data record is reduced when that data record forms part of a cluster.

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10.   A method according to claim 8, wherein the energy level is reduced over time.

11.   A method according to any preceding claim which comprise the step of
15   sensing the arrival of each new data record at the data store and triggering creation of a data agent for that new data record.

12.   A computer system for searching for data patterns in a dynamically changing data store, the data store holding a plurality of data records, the
20   computer system comprising:

an agent creation means arranged to create an agent implemented as an executable program and which has a decision engine operable to match the represented data record with other data records based on a data valuation formula; and

25   a sensor for sensing the arrival of a new data record at the data store and arranged to cause the agent creation means to create a new data agent;

wherein the new data agent is capable of negotiating with any existing agents in the system to form a cluster of data records representing said data pattern.

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13.   A computer system according to claim 12, wherein the agent creation means is arranged to create a cluster agent implemented as an executable program, the cluster agent representing a plurality of data records.

5   14.   A computer system according to claim 12 or 13, which comprises a memory storing ontology accessible by agents, the ontology including clustering criteria for use in the negotiating step.

15.   A computer system according to claim 14, wherein the ontology includes a
10   data valuation formula usable by a cluster agent to determine whether or not to offer membership to the cluster to a new data agent.

16.   A computer system according to claim 14 or 15, wherein the ontology includes a cluster valuation formula usable by a data agent to determine whether
15   or not to apply for membership to a cluster agent.

17.   A computer system according to claim 14, wherein the ontology holds energy levels associated with data records.

20   18.   A data agent for organising data records, the data agent representing a data record and comprising:
      an agent descriptor implemented as an executable program and comprising a set of record parameters defining the type of data record it represents; and
25   an agent body implemented as an executable program and comprising a negotiating interface for communicating with other agents representing data records; and
      a decision engine operable to determine when a record is a match for the type of data record represented by the agent based on a cluster valuation formula
30   and to form a cluster of the represented data record and the matching data record.

19.   A cluster agent for organising data records in a system, the cluster agent representing a cluster of data records and comprising:

an agent descriptor implemented as an executable program and comprising a set of record parameters defining the type of data records in the cluster it represents, with a cluster value representing the strength of the cluster;

an agent body implemented as an executable program and comprising a negotiating interface for communicating with other agents representing cluster records; and

a decision engine operable to negotiate with that agent and any other agents representing data records to determine if those data records should join the represented cluster according to a data valuation formula.

20.   An agent according to claim 18 or 19, wherein the agent body comprises a sensor.

21.   An agent according to claim 20, wherein the sensor comprises at least one of means for reading accessible data fields and a mailbox mechanism for receiving messages.

22.   An agent according to claim 18 or 19, wherein the agent body comprises an actuator.

23.   An agent according to claim 22, wherein the actuator comprises at least one of means for accessing a database to update data fields therein, and means for dispatching a message.

24.   A method of operating a computer system to organise data records, the method comprising:

sensing the arrival of a new data record at a data store adapted to hold a plurality of data records;

instantiating a data agent as an executable program, the data agent representing the new data record;

implementing a clustering process by causing said data agent to negotiate with existing agents, said existing agents including data agents for existing data records and cluster agents, wherein cluster agents represent a plurality of data records.

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25.   A computer system configured as a multi-agent system to organise data records in a data store, the computer system comprising:

a first set of data agents implemented as executable programs, each data agent comprising a set of record parameters defining the type of data record it

10   represents;

a second set of cluster agents implemented as executable programs, each cluster agent comprising a set of record parameters defining the type of data records in the cluster it represents;

wherein the data agents and cluster agents are operable to negotiate by

15   exchanging messages, messages from a data agent containing an application for membership of a cluster, and messages from a cluster agent including rejection or acceptance of the application, and

wherein when a new data record arrives in the data store, a new data agent is created to represent the new data record and is able to disturb

20   established clusters in such a way as to improve a system value representing the quality of clustering.

26.   A computer program product comprising program code means which, when loaded into a computer, cause the computer to implement steps of the

25   method according to claim 24.

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